

### **Remarks/Arguments**

Claims 186-191, 196-199, 201-203, 208-221 and 224-228 were properly identified in the Office Action of August 8, 2006 as pending. Of these, independent claim 199 and dependent claims 201-203 were allowed. Independent claims 186 and 209 were rejected under 35 USC § 112, second paragraph. The remaining dependent claims 187-191, 198, 209-221 and 224-228 were all indicated as allowable if rewritten into independent form. Applicants appreciate the Examiner's indication of allowable subject matter.

### **Amendments To The Specification**

The paragraph appearing under the heading "Government Rights Clause" has been amended in accordance with regulatory requirements. No new matter has been entered by said amendment.

### **Claim Amendments**

Dependent claims 197-198 have been cancelled as they were dependent upon claims previously cancelled in the Response To Non-Final Office Action mailed May 18, 2006. Dependent claim 208 has been amended to recite a proper dependency to claim 199. Minor grammatical corrections have been made to dependent claims 213-214. The dependency of claims 215-216 have been amended to refer to claim 213. Dependent claims 224-225 have been amended to recite a proper notation to the symbol R<sup>1</sup> and to enter a minor clerical correction. Similarly, minor clerical corrections were made to dependent claims 226-228. No new matter has been added by any of the foregoing amendments.

### **Claim Rejections Under 35 USC § 112, Second Paragraph**

Claims 186 and 209 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. In particular, the Examiner recognized that the claims employed the term "a

polymerizable group.” However, the Examiner indicated that “the specification does not define what is meant by the phrase “a polymerizable group.” Applicants respectfully disagree and would appreciate the Examiner’s consideration of the following remarks.

Applicants would first like to direct the Examiner’s attention to paragraph [0020] of the published application, which is reproduced below for convenience:

“[0020] Where the mesogen is a polymerizable group, X and/or Y are “polymerizable groups,” defined as groups that may be polymerized by nucleophilic addition, free radical polymerization, or a combination thereof. Preferred polymerizable groups are polymerizable by Michael addition. Michael addition required the addition of a nucleophile and an electron deficient alkene. Groups suitable for polymerization by Michael addition include but are not necessarily limited to examples found in A. Michel, *J. Prakt. Chem.* [2] 35, 349 (1887); R. Connor and W.R. McClelland, *J. Org. Chem.*, 3, 570 (1938); and C.R. Hauser, M.T. Tetenbaum, *J. Org. Chem.*, 23, 1146 (1959), all of which are incorporated by reference.”

In addition, the Examiner’s attention is directed to paragraph [0026] of the published application:

[0026] R and R<sup>4</sup> are polymerizable groups, including but not necessarily limited to nucleophiles and groups comprising at least one electron deficient alkene. Suitable nucleophiles include, but are not necessarily limited to ester groups, organic acid groups, amine groups, hydroxyl groups, and sulfhydryl groups. More preferred polymerizable groups comprise electron deficient alkenes. Suitable electron deficient alkenes independently are selected from the group consisting of substituted and unsubstituted alkenyl ester groups comprising a polymerizable unsaturated carbon-carbon bond, wherein said alkenyl group has from about 2 to about 12 carbon atoms, preferably about 6 carbon atoms. In one embodiment, said substituted alkenyl ester groups comprise a halogen atom selected from the group consisting of chlorine atoms, bromine atoms, and iodine atoms. Preferred alkenyl esters are acryloyl groups and methacryloyl groups.

It is therefore respectfully submitted that the specification clearly informs one of ordinary skill in the art as to the meaning of the term “polymerizable group” and that the requirements of 35 USC § 112, second paragraph, have been met. Specifically, the term has been unambiguously identified in the specification as a group capable of nucleophilic addition

and/or free radical polymerization. Furthermore, the specification provides citations to applicable references on the exemplary Michael addition type reaction as well as chemical identification of the types of functionalities that would be considered susceptible to polymerization by nucleophilic addition (e.g. ester groups, organic acid groups, amine groups, hydroxyl groups, and sulphydryl groups). The specification also provides guidance as to those electron deficient alkenes that would be susceptible to the disclosed free-radical polymerization (e.g., substituted and unsubstituted alkenyl ester groups comprising a polymerizable unsaturated carbon-carbon bond, wherein said alkenyl group has from about 2 to about 12 carbon atoms). Accordingly, it is respectfully submitted that upon review of the claims, in light of the specification, a person of ordinary skill in the art would readily understand the scope of the claims and the requirements of 35 USC § 112, second paragraph, have been satisfied. See, MPEP § 2173.02 (claims are considered to satisfy the requirements of 35 USC 112, second paragraph, when claim apprises one of ordinary skill in the art of its scope.)

Finally, Applicants note what appeared to be a concern of the Examiner regarding the number of functional groups that would have served in theory as a “polymerizable group.” It appears then that the Examiner’s concern was of course prior to Applicants comments above, which are believed to establish that the term “polymerizable group” as used in the claims was fully discussed in the specification and can be found to comply with the requirements of 35 USC § 112, second paragraph. Moreover, to the extent that the Examiner might continue to have any lingering concerns, Applicants respectfully submit that although a specification definition may be perceived as broad this does not make it indefinite. See *MPEP* § 2173.04 (breadth of a claim is not to be equated with indefiniteness).

### Conclusions

Claims 186-191, 196, 199, 201-203, 208-221, and 224-228 now remain pending in the application. Applicants respectfully submit that such pending claims are now in condition for allowance. The Examiner is also invited to telephone Applicant’s representative listed below to facilitate advancement of the present application.

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Respectfully submitted,

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